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ABSTRACT

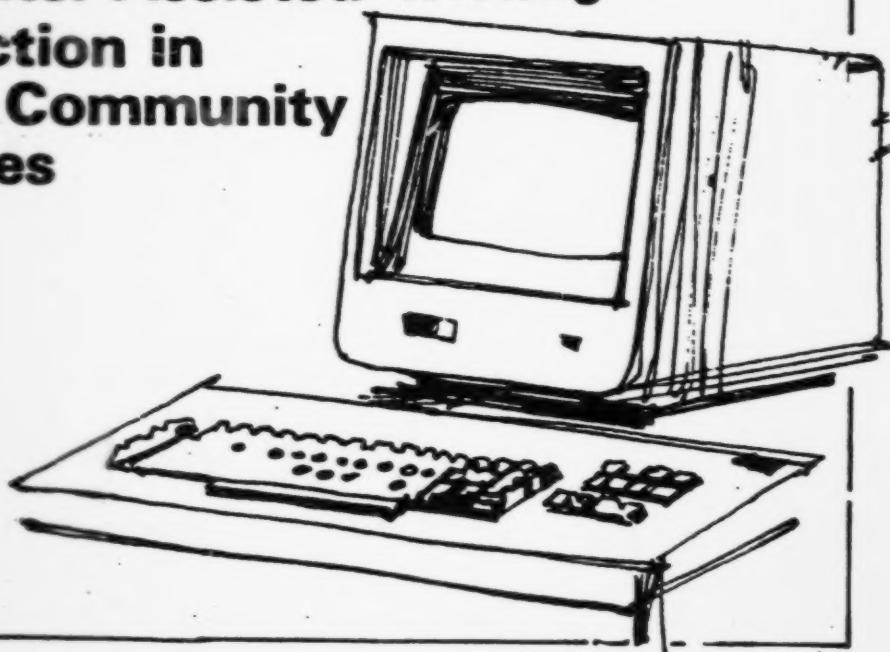
A study explored the status of computer aided instruction (CAI) in writing programs offered by community colleges identified as using CAI. The questionnaire, completed in the winter of 1986 by 198 English instructors, measured accessibility of computers to faculty and students, types of hardware and software, computer locations, computer facility staffing, computer training, students' use of computers, instructional applications, and barriers to CAI. Findings indicated that, although 86% of the respondents had free computer access, the development of CAI was inhibited by faculty lack of interest, time, administrative support, technical assistance, and quality software and hardware. For effective CAI, results suggested that community colleges' administrators should (1) provide adequate hardware and software, (2) support English instructors' innovative efforts in CAI, (3) arrange computer workshops for faculty and institute "computer literacy" courses into all curricula, (4) implement systematic instructional computing within a free-access environment, and (5) increase efficient utilization of staff. In addition, the findings suggested that English instructors should, by acquiring specialized training in learning theories, curriculum development, composition theory, and computer application, be able to make informed judgments about CAI in writing programs. A four-page bibliography and tables of data are included; a sample questionnaire and correspondence data are appended. (JD)

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Computer-Assisted Writing Instruction in Public Community Colleges

1986



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ABSTRACT

This sabbatical study describes the status of computer-aided writing instruction in selected public community colleges. A sample of 198 (90%) usable responses from English instructors was analyzed to describe the accessibility of computers to faculty and students, faculty and students' uses of the computer, types and location of the computers, staffing of computer facilities, and barriers to growth of instructional computing in college-level writing courses.

CHAPTER I

INTRODUCTION

Statement of the Problem

The integration of the computer into community colleges' existing curriculum is a nationwide concern. One of the primary areas of change is the English or Language Arts curriculum. But, why? For years, the public has criticized this curriculum for its inability to meet the students' written communication needs (National Commission on Excellence in Education, 1983; "Now Johnny Can't Write," 1986).

But, what solution does the public offer? Recently, computers have adorned the covers of major periodicals. Time (1983), for example, designated the personal computer, not a person as is its usual practice, for its annual notice of distinction. Some colleges have included the cost of a microcomputer as part of the book and school supply fees. Some states have mandated requirements in computer literacy for graduation. Parts of amusement parks, such as Epcot Center in Disney World, are devoted to interactive computer usage (Tashner, 1984). Clearly, these widespread movements should have increased our awareness of the potential influence of the computer on the writing curriculum. Society expects "visible evidence of English skills from the schools' graduates: they are expected to know how to read, to write, and to think effectively on paper and in conversation" (Worthington, 1985, p. 210).

Besides, critics attack the ineffective instructional approaches, such as the "textbook-fixed-syllabus" method (Schwartz, 1984), which dominate college-level writing courses. The "textbook-fixed-syllabus" approach, for example, is used by those English instructors who view the writing process as a series of neatly, discrete, chronologically ordered tasks, not as a complex of recursive embedded activities (Flower & Hayes, 1981). The writing process, some composition experts state, should be like

a symphony, with different parts cooperating to produce an overall effect. The players need to get through passages or different sections of the orchestra need special work. (Schwartz, 1984, p. 240)

If the linear approach to composition instruction is ineffective, what alternatives do writing instructors have? One possibility is the use of the computer as an instructional adjunct, often referred to as computer-assisted instruction (CAI). It is believed that "the use of computers in teaching writing . . . changes the process (of writing) fundamentally, often making writers better readers of their own work and therefore more willing revisers for other readers" (Schwartz, 1984, p. 240).

The above compelling reasons, then, warrant the exploration of another approach to college-level writing instruction. Time magazine's poll (1983) revealed that sixty-eight percent of the registered voters feel that the microcomputer will improve the quality of students' writing. If Time is an accurate predictor of society's expectations of English teachers, then, perhaps we need to reassess our educational priorities and try to meet the written communication needs of our students.

Does CAI for writing, specifically in two-year colleges, represent a forward step in the teaching of composition? Does it represent a significant improvement over the more traditional handbook or textbook-based approaches that are so often indirectly forced upon English teachers? Can it be used to evaluate students' writing performance and provide feedback? Although CAI, the most popular form of instructional computing, is in its embryonic stage, evidence suggests that it is a powerful, instructional tool (Pressman & Rosenbloom, 1984). CAI is

the direct use of the computer for the facilitation and certification of learning - - that is, using the computer to make learning easier, is ~ likely to occur (facilitation) as well as using the computer to create a record proving that learning has occurred (certification). (Burke, 1982, p. 16).

One must be cautioned, however, that CAI is not to be viewed as a panacea, as a cure-all for students' writing problems (Nancarrow, et al., 1984).

What, then, can writing instructors expect from CAI? The successes of CAI are dependent on the availability and judicious use of quality CAI software; teachers' knowledge of learning theories, composition theory, and computer applications; strong institutional support of instructional computing; and access to quality hardware (Larsen, 1984; Matteoni, 1983; Vacc, 1985).

Thus, we need to become more knowledgeable of the current trends in instructional computing, specifically CAI, because

- Computer technology easily becomes dated.
- Continual use of computers uncovers new instructional strategies.

- We face the demanding responsibilities of designing, maintaining, and evaluating curriculum.
- Providing our students with an up-to-date curriculum is essential.
- We should accept the responsibility for providing learning experiences that are timely, that provide for the professional and personal growth of our graduates, and that draw on the particular strengths and abilities of the teaching staff (Bean, 1983; David, 1984; Kantos, 1985).

This study, therefore, is directed to a fulfillment of the above-stated instructional responsibilities. It is one attempt to find out how computers are used in college-level writing courses offered by selected public community colleges. It is also one attempt to determine if recent technological advances justify the systematic integration of computers into the colleges' writing curriculum. But, before one can understand the uses of the computer as an instructional supplement in writing courses, one needs to become better informed of CAI's conceptual background and the empirical underpinnings which purport its potential efficacy.

Limitations of the Problem

This study describes the current uses of the computer, as an instructional adjunct, in selected public community colleges' transfer-level writing courses. Those courses apply only to freshman composition and technical writing. Related courses such as business communication, reading, literature, and remedial writing courses were not addressed.

Theoretical Considerations

The areas of CAI that have received the most attention are drill/practice, tutorial, and simulation (Vacc, 1985); therefore, only those three modes of instructional applications of the computer will be addressed in this section.

The learning theories that have the greatest impact on CAI are as follows:

- Skinner's operant conditioning,
- Cognitivists' basic tenets, and
- Bandura's social learning theory.

From its earliest beginnings in the 1950s, CAI courseware owes its theoretical basis to Skinner's operant conditioning (Burke, 1982; Chambers & Sprecher, 1983; Rockhart & Morton, 1975; Waldrop, 1984). Based on a stimulus-response premise, students are given a question -- a stimulus; then, the students answer -- a response; then, feedback is provided -- reinforcement. Thus, students are rewarded and learning is reinforced by the mere feedback that the answer is accurate.

Specifically, Skinner's views are instrumental in the development of CAI courseware such as drill/practice and tutorial programs. Those programs demonstrate these behavioristic characteristics. First, drill/practice CAI programs are the commonest and earliest author-controlled mode of instructional computing (Burke, 1982; David, 1984; Kantos, 1985; Rockhart & Morton, 1975). Based on repetitive reinforcements, habitual responses -- characteristics of the Skinnerian learning model - drill/practice programs are viewed as "electronic page turners" (Pressman &

Rosenbloom, 1984): they only provide an electronic book format on a screen without any additional advantages.

Another CAI program that is based on the Skinnerian model is the tutorial. Designed primarily to focus on the students' acquisition of new information, this system is also characterized by repetitive reinforcement and habitual responses. Its one advantage over the drill/practice programs is its ability to use sequential frames with branching to permit individualized pacing for each student's needs.

That is, based on a Skinnerian model of learning, both CAI programs

- Suggest that physical responses are important in thinking and learning.
- Endorse rote learning.
- Show that the learning process leads the learner from a simple response to progressively more complicated ones.
- Demonstrate that positive reinforcement should consistently follow each occurrence of the desired response until the selected level of mastery is achieved. Once the mastery is achieved, the students should be shifted from continuous reinforcement to a pattern of intermittent reinforcement.

Thus, in the drill/practice and tutorial programs,

- Teachers become automated, tutors, coaches, and advisers.
- Students are active learners who control the learning situation if they do not have to follow a rigid structure from the beginning to the end of the lesson.

- Learning strategies are concerned with presentation of materials and questions to help the students to achieve the correct responses, followed by reinforcement of the correct responses.
- The computer plays the role of the adviser.

A second theoretical premise for CAI courseware is the learning models of cognitivists. Concerned with how learners acquire information, how they process information, and how they use this knowledge to make decisions and perform tasks, the authors of these CAI systems favor presenting the learners with progressively less structured concepts (Rockhart & Morton, 1975). Although these systems are also concerned with the learners' responses, questions, and reinforcement, they generally stress these learning activities:

- Storing of information in long-term memory;
- Processing involved in encoding and decoding information;
- Retrieving stored information; and
- Controlling attention.

One of the active pioneers of this approach is Robert Gagné whose most important contribution to CAI is the design and development of advanced tutorial modules. Gagné identifies five types of learning outcomes which are of prime importance to any learning situation:

- Intellectual skills, entailing how to perform an activity;
- Cognitive strategies, demonstrating capabilities that govern an individual's own learning, remembering, and thinking behaviors;

- Verbal information, involving the ability to use the language well;
- Motor skills, entailing the ability to perform tasks which demand those skills; and
- Attitudes, controlling motivation of learners.

Other concepts that Gagné stresses in the teaching-learning process and which are crucial in the design of CAI programs are as follows:

- Goals of learning task followed by specific instructional objectives to meet those goals;
- Learning objectives written in concrete behavioral terms;
- Occurrence of learning in small steps, in a sequence from simple to most complex;
- Positive, repetitive reinforcement; and
- Maximum mastery (90%) of the task's objectives.

A third learning theory that influences the design and development of CAI courseware is Bandura's social learning model. By combining cognitive psychology, principles of behavior modification, and his own emphasis on the individual in the social setting, Bandura (1977) conceives of his modeling concept. He firmly believes that both direct and vicarious experiences are of prime importance in any learning situation:

Most human behavior is learned observationally through modeling; from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action. Because people can learn from example what to do, at least in approximate form, before performing any behavior, they are spared needless errors. (p. 22)

Learning, Bandura states, is governed by four processes:

- Attention
- Retention

- Conversion of symbolic representations into appropriate actions
- Motivation.

By observing others making the appropriate responses to an activity, and then by imitating the model's responses, the learner will be able to perform that activity with accuracy.

Bandura's social learning theory forms the theoretical framework of most CAI simulation software. Designed to reflect a "real life" situation, simulations are explored by the learner. The computer is programmed to impose randomly generated "catastrophes" on this real-life situation to which the students must respond in a knowledgeable way if they want to complete the activity successfully (David, 1984). So, although the learner is not faced with a real model in these CAI programs, the computer provides a meaningful activity which prompts the student to learn vicariously through the interaction with this life-like model. Thus, in responding to the model, the learner receives positive reinforcement which causes a change in conditions; learning, then, results.

Thus, in applying Bandura's social learning theory to the design and development of CAI programs, specifically simulation programs, care is given to

- Clear learner instructions,
- Interaction between the learner and the computer,
- The computer which acts as a model, and to
- The use of substantive real-life experiences.

In sum, authoring systems of computer-assisted writing instruction have relied heavily on different theoretical frameworks. Although some common

points are found in those programs -- such as the importance of reinforcement in the learning situation -- distinctive applications are obvious:

- Stressing the effects of external forces, Skinner's operant conditioning model is primarily applied to simple drill/practice and tutorial programs.
- Emphasizing the effects of internal forces, cognitive theories -- including Gagne's synthesis of behavioral and cognitive concepts -- are primarily applied to advanced drill/practice and tutorial systems.
- Stressing observational learning, Bandura's social learning model is primarily applied to the design and development of CAI simulation programs.

Empirical Considerations

To improve students' writing skills, English instructors have explored and are exploring the uses of CAI. In Emig's research (1977), she encourages us to teach our composition students how to learn -- that is to acquire those needed special communication skills. She also mentions that in optimal learning situations, the hand, the eye, and the brain must be active. What courses have we, as English teachers, taught to help students achieve optimal learning? Although the studies on CAI's effectiveness are not definitive, research evidence exists to show that we are trying to meet our students' written communication needs, especially through the gradual, systematic integration of computers into our college-level writing courses. The potential of computers to help students improve their writing has been documented by several studies. It is, therefore, the purpose of

this section to give a brief overview of research on the early and current uses of computer-aided writing instruction.

From the early 1950s to the early 1970s, the first users of CAI wrote exercise programs by analogy and built those programs around simple stimulus-response patterns (Bridwell, et al., 1984). That is, most of the early programs were criticized by being merely "electronic page turners",¹¹ ✕ which provided a book format on screen without any additional advantages (Pressman & Rosenbloom, 1984).

The earliest experiments in CAI were funded by major computer vendors. Some examples are IBM and Control Data Corporation, the Carnegie Foundation, and the National Science Foundation. CAI projects, however, were done by major colleges and universities like Dartmouth, Stanford, and the University of Illinois (Chambers & Sprecher, 1983; Hirschbull, 1980).

Some of the major research entails the following:

- Dartmouth's development of BASIC, which opened new avenues for CAI;
- Stanford's development of drill/practice CAI programs;
- University of Illinois' development of PLATO, which was a major advancement for CAI.

During the 1970s, the CAI programs became more interactive. TICCIT (Timeshared Interactive Computer Controlled Information Television) system, for example, included an interactive CAI courseware for community college freshman-level writing courses (Alderman, 1977; Sassar, 1982). With the rising costs and questionable quality of CAI programs during the 1970s, another program, CONDUIT -- a consortium effort of several institutions -- provided colleges with a more affordable CAI software (Peters, 1982).

It was not until the latter part of the 1970s that CAI courseware

really improved in quality and became somewhat affordable. Perhaps one reason for this major shift was due to the dislike for drill/practice programs (Rodrigues, 1984). Since the late 1970s, computers are generally used as heuristic, interactive devices that guide students through the entire writing process. The research reveals that CAI, when used judiciously, can

- Increase students' learning,
- Be used to circumvent any limitations of regular traditional instructional methods,
- Decrease the attrition rate of students,
- Decrease writers' block,
- Significantly improve students' overall writing skills,
- Decrease the learning time as compared to regular class time,
- Provide a supportive learning environment,
- Provide immediate editorial advice,
- Motivate the students, and
- Encourage recursive writing (Oates, 1981; Pressman & Rosenbloom, 1984; Tashner, 1984; Wresch, 1982).

Although research shows that drill/practice CAI programs are extremely limited teaching-learning tools, they are, perhaps, the most popular of all computerized courseware in college-level writing courses (Connors, 1985; Huyck, 1980; Wresch, 1982). One reason given for their popularity is that they are easy programs to write (Wresch, 1982). Educational Testing Service's evaluation of the effectiveness of PLATO, a huge collection of drill/practice programs, showed that "PLATO had no consistent impact on either attrition

or achievement" (Alderman, et al. 1978, p. 42). Besides, "the 4,000 students who used PLATO did not show any significant effects in their writing, for either outcome could be plausibly explained by instructional differences" (p. 42).

Several limitations of drill/practice CAI programs recur throughout the literature. Drill/Practice programs, for example,

- Involve boring repetitive drills;
- Are closed programs that do not permit students' interactions;
- Reflect difficulties in the sequencing of learning activities; in accommodating student errors; with student motivation, because students are told what to learn, what order to learn it in, and how much time to take with each frame;
- Represent a linear presentation of data without deviation for errors and background (Chambers & Sprecher, 1983; Hirschbuhl, 1982;

Huyck, 1980; Kiefer & Smith, 1983; Schwartz, 1982; Watts, 1981).

The consensus seems to be that the current drill/practice CAI programs provide practice in training, not in educating the students. Huyck and Kremenak (1980) succinctly express this view: "Education . . . involves assimilating general principles, while training involves acquiring specific skills" (p. 61).

Because current composition theory and research in the nature and development of effective writing stress the role of learning as an interactive activity, there is a move from the limited defined hierarchial conceptualization of writing -- expressed by static drill/practice -- toward a more fluid, global, integrated view (Flower, 1979; Flower & Hayes,

1981). This new approach lends itself to an open system which aims to "educate" students as they work toward improvement of their writing skills.

Perhaps, the most important academic pioneer is Hugh Burns whose work began in 1977 to design, program, test, and evaluate CAI modules for stimulating rhetorical invention in freshman composition. Using the CAI modes, tutorial and dialogue, Burns' programs are based on

- Aristotle's Enthymeme Topoi
- Burke's Pentad
- Young-Becker-Pike's Tagmemic matrix (Burns, 1979; Burns & Culp, 1980; Burns, 1983).

In Burns' CAI programs, students experience the kinds of questions English instructors typically ask in order to encourage students to support generalizations with specific evidence, while maintaining unity and coherence within the text. His programs also give students the opportunity to revise and edit their text and to produce "reader-based" prose (Flower, 1979). Thus, Burns' programs suggest a real possibility for interactive CAI, using tutorial and dialogue as primary modes of instruction. He reported that his students were able to explore ideas through syntactic prompts and motivational statements made prior to writing. Those heuristics, he stated, helped the students in expanding and improving their thinking and writing.

Other studies have also showed promise for the future of those CAI programs in college-level writing courses. Schwartz (1982, 1983, 1984), for example, using her own authored CAI programs, revealed the direction in which many interactive programs can go, especially in prewriting. Her program, SEEN (Seeing Eye Elephant Network), is an open-ended, interactive system which engages students in hypothesis-testing, in supporting generalizations, and in composing "reader-based" prose. Her research findings suggested

that her students were more able to transform "what-I-think-information" -- writer-based prose -- to "what-you-need-to-know" -- reader-based prose. Though still in its developmental stage, SEEN, Schwartz reported, helped her students in writing longer essays, in decreasing attrition, and in increasing their grades.

Likewise, other studies have reported similar findings. Redman, Holdstein, and De Celles (1984) used similar CAI tutorials in their study. The experimental group who used CAI improved their writing significantly more than the control group who used a traditional textbook. Their results showed that an effective tutorial CAI program can

- Have an effective place within an overall composition curriculum.
- Be a significant aid in motivating students to spend time on material that they would otherwise find difficult or tedious.

Probably, the most promising and useful application of computer technology to writing is "word processing," a program that facilitates the writing and editing of the text (Daiute, 1983). Using word processing, students can easily do the following:

- Record notes at the keyboard;
- Write, rearrange, and edit drafts;
- Delete, insert, and transpose by a mere key stroke;
- Experiment with various text formats without retyping a word;
- Engage in collaborative composing sessions;
- Receive immediate feedback;
- Reproduce their work.

Zinsser (1983), for example, discussed some changes in students' writing that were made possible by the use of word processing programs. He reported that students refined their writing strategies; developed ease in achieving unity, coherence, and emphasis in their essays; and demonstrated ease in eliminating clutter, expanding and transforming sentences, and in selecting diction. Similarly, Gould (1981) examined the composing process of his students' use of word processing. He compared their performance on the word processing to their performance in preparing handwritten documents. Although his students spent more time using the word processor, their texts, he claimed, were more coherent than those written by hand.

Still others like Bean (1983) found that the word processing capabilities of computers effectively aided the revision process and encouraged students to revise their texts more frequently. Also, Marcus and Blau (1983) used word processing to explore, what they called, "invisible writing." This concept is based on the idea that the "absence of visual feedback" sharpens concentration on each writing task, enhances fluency, and yields texts that are "more rather than less cohesive" (p. 12). Without being able to pause, to edit, or to rewrite, students are forced to give undivided attention to their thoughts, he reported. The experiment used in the freshman composition classes was specifically tailored for those students, and yielded favorable results. That technique, Marcus and Blau (1983) reported, tended to combat writer's block and strengthened the substance of early drafts.

Schwartz (1982, 1984) also viewed word processing as an excellent instructional aid because by students putting their texts on disks, communication and feedback were facilitated. Besides, the disks could be shared to encourage peer group editing; printouts were easy to get, so students could provide copies of their work to their classmates. Additionally, instructors' remarks could be tailored to particular students in that specific setting. Most importantly, students were less defensive about taking corrective suggestions from their peers. The computer seemed to have boosted the writers' self-confidence.

Perhaps, Larsen's findings (1984) best summarize the uses of word processing programs. He reported that word processing speeded up the composing time -- "some 50 percent faster than with an electric typewriter for most writers" (p. 23). Besides, it freed the students from "Engfish," that unnatural, stilted style of writing that English teachers do not like.

Perhaps, the newest and most modified approach to using CAI programs to improve writing skills is the software which analyzes the students' texts and provides immediate, qualitative feedback. Successes with WRITER'S WORKBENCH, for example, are well documented. WRITER'S WORKBENCH, designed by Bell Laboratories, provides many of the functions of a human editor; however, it does not make changes in the text. It only identifies possible writing improvement (Cherry, 1983). Studies reported that students using those CAI textual analysis programs wrote fewer passive sentences, fewer abstract words, and fewer awkward sentences (Cherry, 1983; MacDonald, 1982).

Besides, students' assignment preparation time eventually decreased; their grades gradually improved; and their attitudes toward the computer and writing were favorable. Additionally, Gingrich (1981) found that students using WRITER'S WORKBENCH edited more thoroughly and learned to edit more on their own.

Daiute's study (1983) on text-editing CAI programs revealed the effectiveness of the computer as an invaluable teaching-learning tool. He claimed that because revising, for some students, is a slow and painful process, psychological constraints such as short-term memory and inability to accept readers' evaluative comments prevented some writers from revising their texts. The computer text-editor, however, is a "writing device that can lessen the effects of some physical and psychological constraints" (p. 139). From Daiute's (1983) use of those CAI programs, he drew the following conclusions. Computer text-editors

- Enabled students to compose quickly and freely because all changes are automatically integrated into the text, thus eliminating the need to recopy.
- Stimulated writers to take a reader's point of view and thus they evaluated their writing and found their own mistakes.
- Provided commands for making changes: writers could insert, delete, or make any section changes by giving the computer simple commands rather than recopying. Besides, each version is stored in the computer's memory, and at any time, the writer could have a neatly formatted copy on paper.

- Speeded up the learning of editing skills by offering immediate, reliable, consistent, and specific feedback on features of their prose.

Perhaps, two of the most innovative CAI programs which contain textual analysis coursewares are RSVP (Response System of Variable Prescriptions) and CAMELOT. These two content-, context-free computer-based programs focus on the students' texts and combine prescriptive letters that pinpoint mechanical, grammatical, and rhetorical errors at various skill levels. Although they are not interactive programs -- that is, students do not sit at a terminal and interface with the computer -- the developers cited many instructional benefits that could be derived from their systematic integration into our writing curriculum (Anandam, 1981, 1982, 1983, 1984, 1985; Kotler & Anandam, 1983; Rodrigues, 1984). Some of the functions that RSVP and CAMELOT are designed to perform are as follows:

- Facilitate individual, personalized instruction through the detailed, immediate, qualitative feedback provided by the prescriptive letters which give students editorial advice on their writing performance;
- Increase students' motivation;
- Decrease attrition;
- Enhance learning;
- Function independently of textbooks and instructional resources;
- Foster objectivity in the evaluation of students' writing;

- Enable teachers to keep track of each student's individual progress in writing;
- Enhance the English teachers' creativity through their design of individually authored computerized instructional modules.

Certainly, both programs seem to be viable instructional supplements.

Although CAI is often associated with routinized, mechanized drill/practice, the research presented in this section shows that the computer is a facilitator of learning and a promising, supplementary instructional device. If used judiciously, the studies reported, computer-assisted writing programs, especially the open-ended ones, could update and revolutionize our traditional pedagogical approaches to college-level writing.

Research Questions

The primary purpose of this study is to describe the status of instructional computing in college-level writing courses and to identify factors which prevent its growth. Specifically, the research questions were formulated because CAI is in its embryonic stage, and although it has a strong potential to be a viable instructional tool, its findings are not definitive. Therefore, these questions were posed:

- Do the English faculty have access to computers for the teaching of college-level writing courses? If yes, how many hours per week are they available?
- Where are the computers located?
- Do the students enrolled in the college-level writing courses have access to the computers? If yes, approximately how many hours per week?

- How many and what kind of computers are you using in the college-level writing courses?
 - Are students other than those specifically involved in college-level writing courses permitted to use the computing resources? If yes, under what conditions?
 - How is your computer facility staffed?
 - What kind of computer training have the English instructors had?
 - How do the students use the computer in their writing courses?
 - For what instructional purposes is the computer used by the English faculty?
 - What types of courseware do the English faculty use?
 - If only some English faculty use the computer in writing instruction, what possible factors inhibit its use?
-

CHAPTER II

METHODOLOGY

Population and Sample

The project's population was 350 American public community colleges with more than 5,000 students. A screening letter and questionnaire (Appendix) were sent to 350 community college deans of instruction to determine the contact person to whom the follow-up questionnaire should be sent and the colleges that used computer-aided writing instruction. Of the 350 screening questionnaires, 305 (87%) were returned. Of the 305 returned questionnaires, 220 (72%) used CAI, and 85 (28%) did not. The latter was eliminated from the study. The 220 follow-up questionnaires were sent to the designated English instructors. Of that number, 198 (90%) follow-up questionnaires were returned. The sample was the 198 respondents who returned their follow-up questionnaires, making the response ninety percent.

Data Collection

Mailed questionnaires were used to collect data from deans of instruction and English faculty of selected public community colleges in February and March 1986. Two sets of questionnaires were sent:

- One, a screening questionnaire, basically requested information from the contact person to whom the follow-up questionnaire should be sent.
- The other, an eleven-item follow-up questionnaire, was designed to solicit short responses on instructional computing in college-level writing courses.

A frequency response rate was computed.

Results and Discussion

An analysis of the 198 (90%) returned follow-up questionnaires revealed these findings.

First of all, the respondents were asked to indicate the accessibility of computers to them in the writing courses. As Table 1 shows, an overwhelming majority (86%) reported that they had access to computers for instructional purposes.

TABLE 1: Accessibility of Computers (Faculty)

	<u>%</u>
YES	86.0
NO	13.0
No Response	1.0

In determining the number of hours per week when the computers were available, only one-fourth (25%) of the respondents indicated thirty to forty hours. A few respondents had unlimited number of hours (3%), had over seventy hours (10%), and had less than ten hours (12%). Table 2 breaks down the responses.

TABLE 2: Available Hours

	<u>%</u>
5-10	12.0
10-20	18.0
20-30	6.0
30-40	25.0
Other	39.0

The second question pertained to the location of the computers. As Table 3 shows, the majority of the computers are housed in the computer labs (90%), followed by the writing lab (43%), faculty offices (32%), and English classroom (30%). Some departments apparently do not have a specialized lab; therefore,

they use other labs such as the mathematics lab facilities (6%), CAI Lab (8%), wordprocessing/data processing lab (4%), micro lab (9%), reading lab (10%), and library (11%).

TABLE 3: Location of Computers

	<u>%</u>
English Classroom	30.0
Computer Lab	90.0
Writing Lab	43.0
Library	11.0
Learning Center	30.0
Faculty Offices	32.0
English Department Office	4.0
Math Lab	6.0
Communications Lab	9.0
Micro Lab	9.0
Word/Data Processing Lab	4.0
Reading Lab	10.0
Faculty Lab	14.0

When the respondents were asked about the accessibility of the computers to the students, one hundred eighty respondents (91%) provided students with such services (Table 4).

Table 4: Accessibility of Computers (Students)

	<u>%</u>
YES	91.0
NO	5.0
No Response	4.0

Regarding the number of hours per week when the computers are available, to students, the majority of the respondents (36%) gave several options including unlimited hours (4%) and hours in excess of seventy hours (32%). The minimal range of hours per week was five through ten (9%), followed by twenty through thirty (10%), and thirty through forty (35%), as Table 5 shows.

TABLE 5: Available Hours

	<u>%</u>
5-10	9.0
10-20	6.0
20-30	10.0
30-40	35.0
Other	36.0
No Response	4.0

Respondents were asked to identify the kind and number of computers they were using in teaching writing. The major brand choices were APPLE II E (49%), IBM PC (43%), MacINTOSH (15%), VAX mini- (12%), WANG (9%), TRS-80 (9%), FRANKLIN (9%), TANDY (8%), ESPRIT III (7%), LEADING EDGE (7%), and DEC MATE (5%). As Table 6 shows, no respondent used ATARI 800; only a few used COMMODORE 64 (2%), and TEXAS INSTRUMENT (2%). Approximately 21 respondents (11%) used a mainframe computer with six to two hundred terminals.

TABLE 6: Hardware Brands*

	<u>%</u>
Commodore 64	2.0
IBM PC	43.0
TRS-80	9.0
Apple II E	49.0
Atari 800	0
Dec Mate	5.0
Leading Edge	7.0
Franklin	9.0
Mac Intosh	15.0
SWT PC	2.0
VAX mini-	12.0
Wang	9.0
Epson QX	2.0
Tandy	8.0
Esprit III	7.0
IBM XT	2.0
AT & T	3.0
Texas Instrument	2.0

* Most colleges (62%) used several different types of computers.

Respondents were asked to indicate other students use of the computing resources. The majority of the respondents (80%) indicated that other students could use those resources. Certain conditions, however, were indicated such as:

- Payment of a lab fee
- Use only for college-related courses
- Instructor referrals
- Availability of computers
- Priority given to vocational education students
- Priority given to engineering students
- Priority given to students enrolled in writing courses
- Prior knowledge of computers
- Technical high school students
- By appointment only
- Students must enroll in Business courses.

However, a fair number of the respondents stated that they operated an open-lab situation (43%).

When the respondents were asked about the staffing of the computer facilities, they overwhelmingly stated that they were supervised by staff, meaning faculty and computer technicians (61%). Only one-third of the facilities is staffed by student assistants, with the remainder by para-professionals (Table 7).

TABLE 7: Staffing of Computer Facility

	<u>%</u>
Student Assistants	34.0
Staff	61.0
Other	5.0

Respondents were asked about their computer training. Table 8 reports the responses to that question. The following types of training were given: self-instruction (90%); inservice workshops (46%); college courses (26%); conferences (61%). Many of the respondents acquired their training from a combination of the above.

TABLE 8: Computer Training

	<u>%</u>
College courses	26.0
Inservice workshops	46.0
Self-instruction	90.0
Conferences	61.0
No responses	7.0

Respondents were asked about students' use of the computers in the writing courses. The majority of the respondents used drill/practice (94%), followed by tutorials (65%), word processing (64%), text analysis (39%), simulation (13%), and problem-solving (12%). Only a few students used the computer to take tests (9%), as Table 9 shows.

TABLE 9: Students' Use of Computers*

	<u>%</u>
Simulation	13.0
Drill/Practice	94.0
Tutorial	65.0
Word Processing	64.0
Dialogue	17.0
Text Analysis	39.0
Problem Solving	12.0
Testing	9.0
No Response	9.0

* Many of the respondents indicated that students used a combination of the above-stated applications.

In response to the instructors' use of the computer in writing instruction,

the majority of the respondents indicated word processing (90%), followed by essay evaluation (46%), text analysis (37%), and other applications -- testing and courseware preparation (36%). Only a few (12%) used it for heuristics and for tutorial (18%). Many of the respondents used a combination of all applications (Table 10).

TABLE 10: Instructional Applications

	<u>%</u>
Tutorial	18.0
Word Processing	90.0
Heuristics	12.0
Text Analysis	37.0
Grammar and Mechanics	13.0
Essay Evaluation	46.0
Other	36.0
No Response	7.0

Respondents used a variety of software, as Table 11 shows.

TABLE 11: Variety of Software

	<u>%</u>
Commercial	96.0
Instructor-made	33.0
No Response	5.0

Although a vast majority of the respondents used commercially-designed software (96%), some developed their own (33%), and used them as a supplement to other materials.

Finally, respondents were asked to identify some possible barriers to using computers in their writing courses. Table 12 records their responses.

TABLE 12: Barriers to Using Computers

	<u>%</u>
Hardware Costs	45.0
Software Costs	35.0
Faculty's Lack of Interest	98.0
Faculty's Lack of Technical Assistance	40.0
Lack of Administrative Support	62.0
Lack of Quality Software	37.0
Faculty's Lack of Time	62.0
Other	17.0
No Response	7.0

The overwhelming majority of respondents stated that faculty's lack of interest (98%) is the primary inhibitor. Other important barriers are faculty's lack of time (62%), lack of administrative support (62%), faculty's lack of technical assistance (40%), lack of quality software (37%), and high costs of hardware (45%). Although identifying a variety of obvious barriers to instructional computing in writing, the respondents also noted some often overlooked barriers such as:

- Faculty's fears and misconceptions of computers
- Institutions' lack of commitment
- Lack of administrative leadership
- Faculty's hardware/software inexperience
- Unavailability of computers in an environment conducive to classroom operation
- Lack of awareness of the computers' benefits and ease of use
- Inconvenience of scheduling
- Lack of adequate facilities
- Lack of adequate training
- Departmental politics which discourage interested faculty.

In sum, what can we derive from the information given by the respondents? The responses to the eleven-item questionnaire suggest a positive future for instructional computing. Although most English instructors (86%) have free access to the use of computing, the frequency of use, types, location, staffing, and barriers to growth of instructional computing in college-level writing courses vary. In general, all respondents have very positive attitudes toward computer-aided writing instruction.

CHAPTER III

SUMMARY AND IMPLICATIONS

The primary purpose of this study was to determine the status of computer-aided writing instruction in selected public community colleges. Although no definitive conclusions can be drawn, data from the respondents bode well for the future of CAI and its development as an integral part of composition teaching — including technical writing — and learning. The findings from this study have these implications for current and/or future efforts to integrate computers into college-level writing courses.

For effective computer-aided writing instruction, community colleges'

- Administrators should provide adequate and convenient hardware and software.
- Administrators should support and reward English instructors' innovative efforts.
- Administrators should systematically arrange computer workshops, should institute "computer literacy" courses into all curricula, should designate knowledgeable faculty to coordinate CAI activities, should encourage faculty retraining programs, should sponsor special summer or weekend computer institutes for "interested" faculty.
- Administrators should implement systematic instructional computing within a free-access environment.
- Administrators should design measures to increase efficient utilization of staff.
- English instructors should take the time to educate themselves on the basics of the computer and how the computer can facilitate effective teaching and meaningful learning.

- English instructors should be able to make informed judgments about computer-aided writing instructional programs.
- English instructors should be granted released time to learn how to apply CAI in existing and new courses.
- English instructors should be required to acquire specialized training in learning theories, curriculum development, composition theory, and applicable computer applications.

The computer, it seems, will be the pencil of the future, especially in the field of writing. Therefore, as educators who are charged with the responsibility of providing students with a functional education in a technologically advanced and rapidly changing world, we might as well "hasten to rise to the occasion to close the gap between technologies and teaching" (Anandam, 1982, p.90).

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SCREENING QUESTIONNAIRE

INSTRUCTIONS: Please complete this preliminary questionnaire, then return it to me within two weeks.

COLLEGE: _____

ADDRESS: _____

TYPE OF COLLEGE:

PRIVATE ____ PUBLIC ____ (Please check one.)

1. Do you offer college-level (transferable to other colleges) technical writing courses?

YES ____ NO ____ (Please check one.)

2. Do you offer freshman composition courses?

YES ____ NO ____ (Please check one.)

3. Do you have any form of computer-assisted instruction in your English Department?

YES ____ NO ____ (Please check one.)

4. Who is the contact person for further information about the freshman composition and/or technical writing courses?

NAME: _____

DEPARTMENT: _____

5. What is the estimated college student population?

RETURN ADDRESS:

Pearl Saunders
English Department
St. Louis Community College at Florissant Valley
3400 Pershall Road
St. Louis, MO 63135.

APPENDIX

36



**St. Louis Community
College**

at Florissant Valley

3400 Pershall Road
St. Louis, Missouri 63135

24 January 1986

Dear Dean of Instruction:

I am conducting a survey on the instructional uses of computers in college-level writing courses (those which transfer to other colleges). This survey is a part of my League Fellow's project sponsored by the League of Innovation in the Community College. It is also a part of my sabbatical study granted by the St. Louis Community College.

Enclosed is a brief screening questionnaire designed to give me general information on your college's offerings. Will you take a few minutes to complete and return the questionnaire to me by February 14, 1986? A postage-paid envelope is enclosed for your convenience.

Your responses are important to this preliminary stage of my study, whether computers are used as instructional tools in your English department or not.

I thank you for your assistance. I look forward to your response by February 14, 1986.

Sincerely,

A handwritten signature in cursive script that reads "Pearl Saunders".

Pearl Saunders, Ph.D.
English Department

Enclosure



**St. Louis Community
College**

at Florissant Valley

3400 Pershall Road
St. Louis, Missouri 63136

February 1986

Dear Colleague,

I am conducting a survey on the instructional uses of computers in transfer-level writing courses (those which transfer to other colleges) offered by selected community colleges. This survey is a part of my League Fellow's project sponsored by the League of Innovation in the Community College. It is also a part of my sabbatical study granted by St. Louis Community College.

You have been named the contact person for your college on their response to my screening questionnaire of January 24, 1986.

Could you further assist in this study by filling out the accompanying questionnaire and returning it to me in the enclosed envelope by March 17, 1986? The questionnaire will take you only a few minutes to complete since most of the items are to be checked off.

A summary of the findings will be sent to you. All findings of the study will be anonymous.

Your assistance is appreciated. I look forward to receiving your completed questionnaire by March 17, 1986.

Sincerely,

Pearl Saunders

Pearl Saunders, Ph.D.
English Department

Enclosure

USES OF THE COMPUTER IN COLLEGE-LEVEL WRITING COURSES

Please read each question carefully, then mark your answer in the space provided. You may make additional comments at the end of the survey.

1. Do the English faculty have access to computers for the teaching of college-level writing courses?

☐ YES

☐ NO

If YES, how many hours per week are they available?

☐ 5-10

☐ 20-30

☐ Other (Please specify)

☐ 10-20

☐ 30-40

2. Where are the computers located?

☐ English Classroom

☐ Learning Center

☐ Computer Lab

☐ Faculty Offices

☐ Writing Lab

☐ _____ Other

☐ Library

(Please identify)

3. Do the students enrolled in the college-level writing courses have access to the computers?

☐ YES

☐ NO

If YES, approximately how many hours per week?

☐ 5-10

☐ 20-30

☐ Other (Please specify)

☐ 10-20

☐ 30-40

4. How many and what kind of computers are you using in the college-level writing courses?

NUMBER

TYPE

Commodore 64

IBM PC

TRS-80

Apple II +

Atari 800

Other

(Please identify)

5. Are students other than those specifically involved in college-level writing courses permitted to use the computing resources?

☐ YES

☐ NO

If YES, under what conditions?

6. How is your computer facility staffed?

☐ Student Assistants
☐ Staff
☐ Other

 (Please identify)

7. What kind of computer training have the English instructors had?

☐ College courses
☐ In-service workshops
☐ Self-instruction
☐ Other

 (Please specify)

8. How do the students use the computer in their writing courses?

☐ Simulations
☐ Drill and Practice
☐ Tutorial
☐ Text Analysis
☐ Dialogue
☐ Problem-solving
☐ Testing
☐ Word Processing
☐ Other

 (Please specify)

9. For what instructional purposes is the computer used by the English faculty?

☐ Tutorial
☐ Word Processing
☐ Heuristics
☐ Text Analysis
☐ Grammar and Mechanics
☐ Essay Evaluation
☐ Other

 (Please specify)

10. What types of courseware do the English faculty use?

☐ Commercial
☐ Instructor-made
☐ Other

 (Please specify)

11. If only some English faculty use the computer in writing instruction, what possible factors inhibit its use?

☐ Hardware costs
☐ Software costs
☐ Faculty's lack of interest
☐ Faculty's lack of technical assistance
☐ Lack of administrative support
☐ Lack of useful software
☐ Faculty's lack of time
☐ Other

 (Please specify)

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.